

Issue List and Work Plan for the
2007 Triennial Review of the
Water Quality Control Plan for the Tulare Lake Basin

To meet requirements of section 303(c) of the Federal Clean Water Act and section 13240 of the California Water Code, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) reviews the water quality standards contained in the Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) every three years. This Triennial Review (TR) consists of conducting a public workshop to receive comments on water quality problems in the Basin and preparing a work plan that describes the actions the Central Valley Water Board may take over the next three years to investigate and respond to the high priority issues. Implementation of the work plan depends upon the Central Valley Water Board's program priorities, resources, and other mandates and commitments. Crucial to successful implementation of the actions is adequate support of the Central Valley Water Board's Basin Plan activities.

The Central Valley Water Board began its current Triennial Review for the Tulare Lake Basin Plan by providing a 45-day public notice, culminating in a public workshop, to solicit comments on water quality problems. The public notice contained a brief description of some problems identified by staff. The notice was mailed to the 1,260 entities on the Basin Plan mailing list and emailed to 223 entities. A shorter notice was published for one-day in each of the four major newspapers covering the Tulare Lake Basin area.

The public workshop was held during the regularly scheduled Central Valley Water Board meeting on 13 September 2007 to receive oral comments. Comments submitted after the public workshop was also considered in this review. The Central Valley Water Board received a total of four written comments and eight verbal comments at the workshop. On 15 December 2009, a Draft Issue List and Work Plan was circulated for review, a total of seven written comments were received. Responses to these comments are attached.

The issues listed below reflect the water quality problems identified from public comments received during the review period and staff knowledge about problems in the Basin. The list of issues far exceeds the staff resources allocated to planning activities. Existing resources only allow a small portion of the highest priority issues to be addressed. By prioritizing the activities, the Central Valley Water Board identifies unfunded issues that the Central Valley Water Board will actively seek funding for and will accept funding to accomplish.

Two levels of actions are specified. Current Actions represent the staff's best judgment about what can be done from Fiscal Year (FY) 09/10 through FY 10/11 to address the issue with available resources. Additional Actions depend on more resources becoming available. The priority for each issue indicates the order to address the issues.

Based on the staff analysis, the following issues have been identified as high priority for the Tulare Lake Basin.

- Beneficial Use Designations
- Wetlands
- Salt and Nitrate Management Plan
- Groundwater Assessment and Control Programs

- State Water Board Collaboration

The issues selected for the Triennial Review represent major water quality concerns derived from what is currently known about them. Knowledge about pollution problems may change significantly from one year to the next.

Issue 1: Beneficial Use Designations

Discussion:

The Basin Plan designates beneficial uses to surface waters in three different ways: (1) Table II-1 lists beneficial uses that apply to surface waters of the basins; (2) The beneficial uses of any specifically listed water body generally apply to its tributary streams; and (3) The Basin Plan implements State Water Board Resolution 88-63 ("Sources of Drinking Water Policy") by assigning municipal and domestic supply uses (MUN) to all unlisted water bodies.

The Basin Plan states that all groundwaters in the Region are suitable or potentially suitable for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

Commenters question the appropriateness of the designated beneficial uses. Adjustments to designated beneficial uses for surface and ground waters can only be made through the Basin Plan amendment process. Because all the water bodies in the region have designated beneficial uses, changes to beneficial uses that result in less stringent criteria must be supported by a use attainability analysis as described in 40 CFR 131.10(g)-(j) for uses described in Clean Water Act section 101(a) (2) ("fishable/swimmable" uses), or a similar analysis under 40 CFR 131.10(g)-(h) for other designated beneficial uses.

The State Water Board determined in Order No. 2002-0015, "... where a Regional Board has evidence that a use neither exists nor likely can be feasibly attained, the Regional Board must expeditiously initiate appropriate basin plan amendments to consider de-designating the use. [¶] Moreover, the Regional Board can require dischargers to the affected waterbody to provide assistance, through data collection, water quality-related investigations, or other appropriate means, to support and expedite the basin plan amendment process. ..."

Comments received during the development of the 2008 Integrated Report of Federal Clean Water Act section 305(b) and section 303(d) list suggest that the beneficial uses be reviewed for the following water bodies: 1) COLD for Hume

Lake; 2) COLD for Lake Isabella; 3) COLD for Kern River below Lake Isabella to Southern California Edison Kern River Powerhouse No.1; and 4) COLD for Poso Creek. Comments received from staff suggest that the MUN beneficial use be reviewed for groundwater in various Kern County Westside oilfields.

Priority: High

Current Action: None

Current Resources: None

Additional Action: Because of the large number and size of the unlisted water bodies, developing a logical system of grouping some of the waterbodies and assigning beneficial uses to the groups would involve the most efficient use of resources. Staff would assemble and work with a stakeholder group to define the issues associated with any general classification system and to determine the best and most efficient approach to the assignment of beneficial uses. One possible conclusion of additional studies would be that categorizing the waterbodies will be technically infeasible and beneficial uses will need to be addressed on a site-specific basis. For example, perhaps COLD beneficial use only occurs above a certain elevation in streams with certain geomorphic characteristics. Potentially these streams would be candidates for de-designating COLD. One amendment would be more cost effective than many separate amendments.

Information to group waterbodies may be assisted by addressing specific beneficial uses for Hume Lake, Lake Isabella, and the Kern River. Evaluation of the MUN beneficial uses in groundwater in various Kern County Westside oilfields could be an example of a grouped amendment.

Additional Resources
Requirements:

- 1) Staff – 0.5 PYs is needed each year for three years to address each waterbody and 1.0 PY is needed for the first year to further define the larger issue of grouping water bodies. Future needs would depend on the number of water body categories that are identified.
- 2) Contract(s) – Approximately \$500,000 is needed for each water body to provide the scientific justification and environmental analysis of addressing the beneficial uses.

Approximately \$500,000 is needed to gather information on the groundwater in the Kern County Westside oilfields and develop the environmental analysis to address the beneficial uses. Contract resource needs for grouping water bodies into logical categories to address in a single basin plan amendment would need to be developed with interested stakeholder groups.

Issue 2:

Wetlands

Discussion:

The Department of Fish and Game is concerned with the loss of wetlands through dredge and fill activities or the degradation of wetland habitat from discharges of constituents of concern (pesticides, salts, nutrients, etc.) to surface and/or groundwaters.

The State Water Board has adopted Resolution No. 2008-0026 to begin work on a statewide wetland and riparian area policy for future consideration. Clearly, there is a need for a strong statewide policy that provides both guidance on the protection and restoration of wetlands, as well as assessing and measuring net change in wetland functions.

Priority:

High

Current Action:

Central Valley Water Board staff is participating with State Water Board staff in the development of the Wetland and Riparian Area Protection Policy.

Current Resources:

- 1) Staff – 0.1 PY
- 2) Contract(s) -- None
- 3) Source(s) -- Water Quality Certification Program and Nonpoint Source Program.

Additional Action:

Coordinate with the Department of Fish and Game in areas of wetland damage, focusing on vernal pools within the Tulare Lake bed which may be affected by excess nutrients to delineate these areas of special concern and to develop a program to provide appropriate protection.

Additional Resource Requirements:

- 1) Staff – 0.5 PY per year
- 2) Contract(s) -- \$50,000 (lab analyses)

3) Source(s) – Existing Central Valley Water Board programs

Issue 3:

Salt and Nitrate Management Plan

Discussion:

Elevated salinity and nitrates in surface and ground waters in California's Central Valley is an increasing problem affecting much of California, other western states, and arid regions throughout the world. As surface and ground water supplies become scarcer, and as wastewater streams become more concentrated, salinity and nitrate impairments are occurring with greater frequency and magnitude. The Central Valley Water Board and State Water Board have initiated a comprehensive effort to address salinity and nitrate problems in California's Central Valley and adopt long-term solutions that will lead to enhanced water quality and economic sustainability. Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) is a collaborative basin planning effort aimed at developing and implementing a comprehensive salinity and nitrate management program. The goal of CV-SALTS is to maintain a healthy environment and a good quality of life for all Californians by protecting our most essential and vulnerable resource: WATER.

Current Action:

Staff is working with stakeholders to compile existing data, build capacity in the stakeholder organization, and identify study needs to support this Salt and Nitrate Management Plan. A stakeholder-led Central Valley Salinity Coalition has formed to help fund the continuing effort and conduct the technical studies needed to update the Basin Plans to address salinity and nitrate on a regional basis within 5-7 years.

Priority:

High

Current Resources:

- 1) Staff – 2.5 PYs
- 2) Contract(s) -- \$1.2 million
- 3) Source(s) -- Personnel resources are from the Basin Planning Program, the San Joaquin River Agricultural Unit, and Nonpoint Source Program with involvement from staff in the following programs: Basin Planning, TMDL, ILRP, Title 27, Non-15, SWAMP, and Cleanup. Contract resources are from the Cleanup and Abatement Account.

Additional Action:

Current resources allow staff to participate with CV-SALTS and to start assessing salinity and nitrate concerns. Additional resources are necessary to complete assessment of these

concerns, affirm beneficial uses, establish appropriately protective water quality objectives and develop implementation programs to achieve the water quality objectives.

Wineries can produce substantial quantities of stillage waste which is high in concentrations of BOD, EC, TDS, and nitrogen. The Basin Plan includes guidelines for the disposal of stillage waste that are based on a study conducted in 1980. The Basin Plan notes that the guidelines represent minimum requirements for disposal of stillage waste from wineries and do not preclude the establishment of more stringent requirements to comply with water quality objectives. More recent information indicates that the guidelines do not adequately protect groundwater. The guidelines should be reviewed and, if necessary, they should be revised with more rigorous requirements to provide adequate groundwater protection. Evaluation of the guidelines must be done in coordination with CV-SALTS but can be a separate project that is part of the larger salt and nitrate management plans.

**Additional Resource
Requirements:**

- 1) Staff – 0.5 PYs per year to work on winery issues.
- 2) Contract(s) - \$50 million to work on salt and nitrate management plans. No contract resources needed for winery issues.
- 3) Source(s) – Stakeholder contributions for the salt and nitrate management plans. Unknown source of resources for winery issues.

Issue 4:

Groundwater Assessment and Control Programs

Discussion:

The Basin Plan describes various groundwater quality problems that exist throughout the region and includes numerous policies that address prevention and cleanup of groundwater quality problems. There are programs in place that are designed to address localized problems (i.e., underground storage tank and site cleanup programs) but there has been no organized effort to address the widespread problems of nitrates and salts. The Tulare Lake Basin is essentially a closed basin because surface water only drains north into the San Joaquin River Basin in years of extreme rainfall and because there is little subsurface outflow. Degradation of groundwater in the Tulare Lake Basin by salts is unavoidable without a plan for removing salts from the Basin. In the Basin Plan, the Central Valley Water Board considers a valleywide drain to be the best technical solution,

but recognizes the drain is not imminent. The Basin Plan recognizes the only other solution is to manage the rate of degradation by minimizing the salt loads to the groundwater body. A major effort is needed to assess the current conditions, determine the factors contributing to present groundwater impacts, and develop policies that can be used to correct existing problems and prevent future problems.

Nitrates. A 1988 State Water Board report to the State Legislature on Nitrates in Drinking Water (SWRCB, 1988) reported that 10 percent of the samples in STORET (the USEPA database) were above the primary Maximum Contaminant Level (10 mg/L nitrate-nitrogen). A geographical depiction of wells with levels of nitrate above background (greater than 4.5 mg/L nitrate-nitrogen) showed the highest densities in the Central Valley are close to the Highway 99 corridor and primarily around population centers (e.g., Modesto, Yuba City, Fresno, and Bakersfield) and concentrated animal confinement areas (e.g., feedlots and dairies). As noted above, nitrate is one of the most frequently-exceeded constituents in public supply wells.

The primary health concern is with the consumption of water with elevated nitrate which is the condition known as methemoglobinemia. Methemoglobinemia, more commonly known as “blue baby syndrome,” is the interference by nitrate to the absorption of oxygen by hemoglobin in the blood. Infants, younger than 6 months, are most susceptible and the oxygen deficit in the blood stream produces blue coloration of the lips and skin, hence the term “blue baby.” More severe cases result in death. The health impacts to infants subject to chronic oxygen deprivation, as a result of nitrate consumption in drinking water, which do not result in mortality, are unknown. The condition is often misdiagnosed and is believed to be under reported. A survey of hospital discharge records by the Department of Health Services (DHS) between 1983 and 1995 revealed 97 cases of methemoglobinemia in children younger than one year. The database, however, was incomplete and it could not be determined how many cases were attributable to consumption of nitrate contaminated groundwater as other factors can also lead to this condition, such as aerosol deodorizers and certain pharmaceuticals.

The primary sources of nitrate in groundwater are application of nitrogen fertilizers, disposal or reuse of animal waste at confined animal production facilities, and individual sewer systems (septic systems).

Areas of intensive crop production in highly permeable soils, especially of crops with a high nitrogen demand (e.g., vegetables, citrus, and silage corn), are known or suspected of causing elevated nitrate levels in the groundwater (e.g., Salinas Valley, Chico Basin and Hilmar area of Merced County). Groundwater in crop production areas can become contaminated with nitrate when nitrogen fertilizers are applied at rates in excess of crop utilization and inefficient irrigation or high rainfall leach the nitrate to groundwater. Other factors that put groundwater at risk are a shallow aquifer, the absence of a restricting layer to vertical migration of nitrate, permeable soils, and poor well construction. The Irrigated Lands program may address some of these issues by starting the process of identifying impacts and requiring development and implementation of practices to reduce and/or eliminate the impacts.

Salt. Salts, as measured by Total Dissolved Solids (TDS) or electrical conductivity (EC) are of concern because they interfere with agricultural, industrial, and domestic beneficial uses of groundwater. However, salts are also of concern in surface waters. See Work Plan Issue No. 3 for a more detailed description of salinity issues.

Many of the water agencies within the Tulare Lake Basin have groundwater management plans which include monitoring programs. Staff should work with the water agencies to share information in protecting water quality and implement a modified network that might meet the Central Valley Water Board needs. Water agencies and staff should identify areas within the Tulare Lake Basin where the groundwater is adversely impacted by salts and chemicals to the extent that the groundwater no longer supports all its beneficial uses. Where presence of salts and chemicals are due to nonpoint source impacts and the source is not clear, investigations should be done to identify potential sources of these contaminants and practices should be developed to mitigate these impacts. Where areas of the Basin are threatened with increasing salinity, practices should be developed to reduce these impacts.

Priority:

High

Current Action:

The Supplemental Report of the 1999 Budget Act and later the Groundwater Quality Monitoring Act of 2001 required the State Water Board to develop a comprehensive ambient groundwater monitoring plan. To meet this mandate, the State Water Board

created the Groundwater Ambient Monitoring and Assessment (GAMA) Program. The primary objective of the GAMA Program is to comprehensively assess statewide groundwater quality and gain an understanding about contamination risk to specific groundwater resources.

The Central Valley Water Board has established the Groundwater Monitoring Advisory Workgroup (GMAW) whose primary goal is to provide input on matters related to groundwater monitoring. Specifically, the GMAW will advise and provide comments to Central Valley Water Board staff on technical issues related to how groundwater monitoring studies are conducted and evaluation of monitoring data. The GMAW will provide advice and comments on specific issues. However, specific sites or dischargers will not be discussed.

As mentioned in Work Plan Issue No. 3, CV-SALTS are engaged in activities involving salinity and nitrates. The CV-SALTS committees have indicated their willingness to assist staff as pieces of the groundwater strategy related to salinity and nitrate management are developed.

Current Resources:

- 1) Staff – 1 PY
- 2) Contract(s) - \$0
- 3) Source(s) – Existing Central Valley Water Board programs

Additional Action:

Monitoring collected under the GAMA program should be evaluated to determine what discharge activities are impacting groundwaters and to develop management practices to protect groundwater quality. A groundwater monitoring program specific to the Tulare Lake Basin should be developed to track trends in groundwater quality and to evaluate the effectiveness of implementation programs.

Monitoring data should be assessed to identify controllable sources and to provide the technical supporting documentation for basin plan implementation programs to control discharges that degrade groundwater quality. Strategies and implementation programs should maintain groundwaters as close to natural concentrations of dissolved matter as is reasonable considering careful use and management of water resources. Stakeholder groups should be convened to identify management measures that would reduce the amount of nitrates and salt leached to groundwater.

**Additional Resource
Requirements:**

- 1) Staff - 2 PYs per year for three years
- 2) Contract(s) -- \$1,000,000 to develop a groundwater monitoring program and conduct initial monitoring. \$500,000 per year to conduct a continuous groundwater monitoring program. \$100,000 per year for three years to help develop an implementation program to protect groundwater quality.

Issue 5:

Electrical Conductivity Effluent Limit

Discussion:

The Basin Plan contains electrical conductivity effluent limits for discharges of municipal and domestic, industrial, and oil field wastewaters. Municipal and domestic discharges are limited to the electrical conductivity (EC) of the source water plus 500 micromhos per centimeter ($\mu\text{mhos/cm}$).

Industrial dischargers are required to meet an EC limit of the source water plus 500 $\mu\text{mhos/cm}$ unless it can be demonstrated that allowing a greater net incremental increase in EC will result in lower mass emissions of salt and in conservation of water. Industrial dischargers are also allowed an exception if the increased EC is due to an unavoidable concentration of organic dissolved solids from the raw food product. In both these exceptions, beneficial uses must still be protected.

Oil field dischargers are generally required to meet a limit of 1,000 $\mu\text{mhos/cm}$ unless the discharger can successfully demonstrate to the Central Valley Water Board in a public hearing that the proposed discharge will not substantially affect water quality nor cause a violation of water quality standards.

The Central Valley Water Board has been requested by municipal dischargers to revise the EC effluent limit in order to take into consideration water conservation measures. Suggestions from commenter's were to develop an EC credit for calcium, potassium, and magnesium, allow the exception of increased EC due to unavoidable concentrations of organic dissolved solids from raw food products extend to dischargers other than food processors, and apply the 500 $\mu\text{mhos/cm}$ increase to receiving rather than source water.

Priority:

Medium

Current Action:

Public outreach to study the characteristics of the municipal wastewaters to determine typical mineral composition, sources

of atypical salt concentrations, and alternative salinity control measures. Evaluate the reuse of certain salts as agricultural amendment as a potential credit. In addition, study water conservation measures to determine the overall effect on electrical conductivity increase.

Current Resources:

- 1) Staff – 0.025 PY for FY 09/10, 0.025 PY for FY 10/11
- 2) Contract(s) -- \$0
- 3) Source(s) -- Central Valley Water Board and State Water Board

Additional Action:

The funding for the primary action is only enough to do some public outreach without being able to actually study the characteristics of municipal wastewater. Additional resources are needed to conduct the evaluation.

Additional Resource
Requirements:

- 1) Staff - 1.0 PY
- 2) Contract(s) - \$30,000
- 3) Source(s) – State Water Board

Issue 6:

State Water Board Collaboration

Discussion:

The State Water Board is developing policy and criteria on a statewide level for many programs. The Central Valley Water Board is collaborating in the development of many of these issues. An itemized list of the policies and criteria are as follows:

- 1) Anti-Degradation Policy
- 2) Aquifer Storage and Recovery Policy
- 3) Bio-indicator Development
- 4) Cadmium objective and implementation policy
- 5) Chlorine residual objectives and implementation policy
- 6) Mercury offset policy
- 7) Methylmercury objectives
- 8) Onsite wastewater treatment regulations/waiver
- 9) Toxicity control provisions for the SIP

Priority:

High

Current Action: The Central Valley Water Board staff is actively engaged in roundtables, and participating and coordinating with the State Water Board on the policies and criteria enumerated above.

Current Resources: 1) Staff – 0.2 PY
2) Contract(s) - \$0
3) Source(s) - Basin Planning, NPDES and WDR programs.

Issue 7: Water Quality Objective for pentachlorophenol

Discussion: The U.S. Environmental Protection Agency recommends that the Regional Water Board address potential revisions to the pentachlorophenol water quality objectives.

Priority: Medium

Current Action: None

Current Resources: None

Additional Action: The issue of more restrictive California Toxics Rule criteria for pentachlorophenol should be addressed. A plan needs to be developed to implement the water quality objective where applicable to protect early life stages of salmonid fish under low dissolved oxygen and high temperatures. Additional resources are needed to conduct the evaluation.

Additional Resource Requirements: 1) Staff - 1.0 PY
2) Contract(s) - \$50,000